

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A fuel pump for supplying fuel drawn from a fuel tank into an internal combustion engine, the fuel tank pump comprising:

a rotor;

a rotation shaft, which revolves integrally with the rotor;

bearing members, which support both axial ends of the rotation shaft;

a stator, which is disposed on an outer circumference of the rotor and surrounds the rotor;

a housing, which houses therein the rotor, the rotation shaft, the bearing members and the stator;

a drawing force generative means, which is fixed to the housing at an axial end of the housing to face the rotor in an axial direction of the rotor generates drawing force for drawing fuel from the fuel tank into the housing by means of rotation force of the rotor, wherein:

the rotor has a recess in a center of its axial end portion;

at least one of the bearing members is disposed in the recess;

the stator has a permanent magnet, which is disposed on its circumference and forms a plurality of magnetic poles the polar characters of which are alternated;

the rotor includes an armature, which is rotatably disposed inside of the stator, and a commutator, which rotates integrally with the armature and has a plurality of segments respectively electrically connected with coils of the armature; and

the armature has a cover, which covers one of the axial end portions of the armature and is rotatable with the coils, and said recess in the rotor includes a recess formed in said cover.

2. (Original) A fuel pump according to claim 1, wherein:
the drawing force generative means has a rotation member, which rotates integrally with the rotor, and a case member, which houses the rotation member;
the case member has a projecting portion, which is disposed in the recess, and at least one part of the projecting portion projects toward the recess; and
the projecting portion supports one of the bearing members by an inner periphery of the projecting portion.

3. (Currently amended) A fuel pump for supplying fuel drawn from a fuel tank into an internal combustion engine, the fuel-tank pump comprising:

a housing;
a rotor provided in the housing;
a rotation shaft, which revolves integrally with the rotor;
shaft bearing members, which support both axial ends of the rotation shaft;
a stator, which is disposed in the housing to surround on an outer circumference of the rotor; and surrounds the rotor; and
a drawing force generative means, which generates drawing force for drawing fuel from the fuel tank by means of rotation force of the rotor to supply the fuel through the housing in an axial direction of the rotor, wherein the rotor and the drawing force generative means are disposed to be overlapped in ~~an~~ the axial direction of the rotor, wherein:

the rotor and the drawing force generative means respectively have stepped portions;

the rotor and the drawing force generative means are disposed to be overlapped in the axial direction of the rotor so that the stepped portions oppose each other;

the stator has a permanent magnet, which is disposed on its circumference and forms a plurality of magnetic poles the polar characters of which are alternated;

the rotor includes an armature, which is rotatably disposed inside of the stator, and a commutator, which rotates integrally with the armature and has a plurality of segments respectively electrically connected with coils of the armature; and

the armature has a cover, which covers one of the axial end portions of the armature, and said stepped portion of the rotor includes a stepped portion formed in said cover, and

the cover is rotatable with the coils of the armature and faces the drawing force generative means.

4. (Previously presented) A fuel pump according to claim 2, wherein at least one part of the projecting portion is disposed in the recess, and thereby the rotor and the drawing force generative means are disposed to be overlapped in an axial direction of the rotor.

5. (Original) A fuel pump according to claim 4, wherein the rotor has a recess in a center of its axial end portion.

6. (Original) A fuel pump according to claim 5, wherein the drawing force generative means has a rotation member, which rotates integrally with the rotor, and a case member, which houses the rotation member.

Claims 7-12. (Canceled).

13. (Original) A fuel pump according to claim 1, wherein: the cover has a connective portion, which is disposed at a bottom of the recess and connected with the rotation shaft, and a cylindrical portion, which extends from an outer periphery of the connective portion to an opening of the recess along the rotation shaft; and thickness of the connective portion is thicker than thickness of the cylindrical portion.

14. (Original) A fuel pump according to claim 1, wherein: the armature includes a plurality of bobbins arranged in the circumferential direction of the armature; and each bobbin is wound with a coil by way of concentrated winding.

15. (Original) A fuel pump according to claim 14, wherein the armature includes: a central core, which is disposed in the rotational center of the armature; and a plurality of coil cores magnetically connected with the central core, the coil cores being different bodies from the central core and disposed in the outer circumference of the central core to be arranged in the circumferential direction thereof.

16. (Previously presented) A fuel pump according to claim 14, wherein a room around each bobbin to be wound with a coil is formed to be a trapezoidal shape that becomes smaller from the outer periphery to the rotational center of the coil core.

17. (Original) A fuel pump according to claim 1, wherein the position of the centroid of the rotor is positioned in the substantial center between the bearing members.

18. (Original) A fuel pump according to claim 3, wherein the position of the centroid of the rotor is positioned in the substantial center between the bearing members.

19. (Currently amended) An apparatus for supplying fuel drawn from a fuel tank, the apparatus comprising:

- a rotor including armature coils;
- a rotation shaft, which revolves integrally with the rotor;
- bearing members, which support both axial ends of the rotation shaft;
- a stator disposed around an outer circumference of the rotor;

a drawing force generative means, which is disposed adjacent to the rotor in an axial direction of the rotation shaft and generates drawing force for drawing fuel from the fuel tank by means of rotation force of the rotor and supplying the fuel into a space between the rotor and the stator in the axial direction, wherein:

the rotor has a recess in a center of one axial end portion thereof, which faces the drawing force generative means;

at least one of the bearing members is disposed in the recess to overlap with the rotor in the axial direction; and

a cover provided over a surface of the one axial end portion of the rotor thereby to smooth flow of the fuel supplied through the drawing force generative means, the cover being rotatable with the rotor.

20. (Previously presented) An apparatus according to claim 19, wherein the cover has a tapering part disposed circumferentially around the rotation shaft, a diameter of the tapering part being gradually increased from the center of said one axial end portion of the rotor toward the drawing force generative means.

21. (Previously presented) An apparatus according to claim 19, wherein said cover is disposed between said at least one bearing member and said recess in the rotor.

22. (Previously presented) A fuel pump according to claim 1, wherein said cover is disposed between said at least one bearing member and said recess in the rotor.

23. (Previously presented) A fuel pump according to claim 1, wherein said recess in said cover defines a receptacle opening away from the armature that at least partially receives said at least one bearing member.

24. (New) An apparatus according to claim 19, further comprising:

a housing in which the rotor is rotatably provided and to which the stator is fixedly provided,

wherein the drawing force generative means is fixed to one axial end of the housing.

25. (New) An apparatus for supplying fuel drawn from a fuel tank into an internal combustion engine, the apparatus comprising:

a housing;

a rotor provided in the housing and having a recess in a radial center portion of an axial end portion thereof;

a rotation shaft passing through the radial center portion of the rotor and rotatable with the rotor;

a stator disposed in the housing to surround an outer circumference of the rotor;

a pump cover having a fuel inlet port;

a pump casing attached to the pump casing and positioned between the pump cover and the rotor, the pump casing having a fuel outlet port from which fuel is discharged into the housing; and

an impeller disposed between the pump cover and the pump casing and fixed to the rotation shaft to be rotated by the rotation shaft, wherein:

the pump casing rotatably supports the rotation shaft therein, and

the pump casing is disposed to extend into the recess of the pump casing in an axial direction of the rotation shaft.

26. (New) An apparatus according to claim 25, wherein:

the pump casing has a radial center portion, which rotatably supports the rotation shaft and projects into the recess to overlap with the rotor in the axial direction of the rotation shaft.

27. (New) An apparatus according to claim 26, further comprising:

a bearing disposed between the rotation shaft and the radial center portion of the pump casing to rotatably support the rotation shaft, the bearing being disposed in the recess of the rotor.

28. (New) An apparatus according to claim 26, wherein:

the pump cover and the pump casing are provided in the housing with the stator and the rotor, and the pump cover closes one axial end of the housing;

the rotor has a core fixed to the rotation shaft and coils extending from the core in the axial direction of the rotation shaft to form the recess in a radially inside part thereof; and

the rotor has a cover, which covers axial end face of the coils to smooth the axial end face of the coils and promote smooth flow of fuel into a space between the rotor and the stator.